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HOW TEACHERS MAY USE FARMERS' BULLETIN 1148 COWPEAS: CULTURE AND VARIETIES

F. A. MERRILL

Assistant in Agricultural Education



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THE TEACHING OF AGRICULTURE in any community should have a vital connection with the problems of the farms of that community. Pupils are interested in those things about which they have some knowledge. The type of agriculture practiced in the community can be used to the best advantage in teaching. Therefore the teacher should organize the available subject matter which is of community interest and present it in such a manner that it will touch closely the life and experiences of the pupils. In order to do this the teacher must be familiar with the agricultural interests of the community.

For the purpose of assisting teachers in work of this kind circulars suggesting how teachers may profitably use information contained in certain publications of the United States Department of Agriculture are prepared from time to time. It is hoped that these circulars will serve to improve methods of instruction in agriculture and related subjects in the schools, and that a closer relation will be established between the work of the school and the interests of the community.

While these circulars are prepared more especially for teachers in elementary schools, they may serve as a basis for instruction in agriculture in secondary schools in urban as well as in rural schools.

The topics as outlined in this circular and the method of presentation should be of distinct value to teachers of agriculture in teaching the culture and varieties of cowpeas.

COWPEAS: CULTURE AND VARIETIES.

Range of use.—This bulletin is well suited for use both in rural and village schools throughout that area of the United States lying south of the Ohio River and east of the prairie States. It may be used in the southern sections of Pennsylvania, Ohio, Indiana, Illinois, and Iowa, if cowpeas are grown as a field crop. It is an extremely valuable publication for the district agricultural schools of the South, and may be profitably handled in the various agricultural colleges of this area in their short courses in agronomy. County agents, club leaders, and directors of farm institute work will find it of very material assistance.

Relation to course of study.—The bulletin may be used as a text upon the production of cowpeas, one of the most important field crops in the South. The introduction of diversified farming, and the recognition of the necessity of employing some nitrogen-gathering crop as a soil improver, makes this bulletin of vital importance to the farmer and hence to all schools that teach agriculture.

Illustrative material.—Samples of the cowpea plant are easily obtainable in the South. They should be brought into the classroom for intimate class study. Visits should be made to various farms that are growing the crop for observation and study. Diseased plants should be gathered and studied. Collections should be made of various insects that attack the crop. Methods of treatment should be tabulated in the form of wall charts and kept for future use. The State experiment stations and agricultural colleges will probably be able to furnish photographs of plants and crops for school use. Ways of curing the crop and preparing it for the silo may be illustrated by photographs taken in the field or obtained from some commercial photographic supply house.

Topics for study.—

I. History of the cowpea.

- (1) Origin.
- (2) Varieties.
- (3) Name.
- (4) Habitat.

Collateral study.—Locate on the world map the original home of the cowpea. Upon an outline map of the world color the areas that grow this crop. Do the same on a map of the United States.

Thought questions.—1. What are the three main groups of the cultivated cowpea? 2. What are hybrids? 3. Why should the cowpea sometimes be called the "southern pea"? 4. What is meant by habitat? 5. Why is the cowpea sometimes called a "universal crop"?

II. Climatic adaptations.

- (1) Area of growth.
- (2) Growing conditions.

Collateral study.—Study the physiographic features of the States in the cowpea area. Study the climatic conditions of these States, noting frost dates, precipitation, prevailing winds, and storm areas.

Thought questions.—1. What is meant by "warm-weather crop"? 2. Name some other warm-weather crops. 3. What is a drought? Why does this hurt the cowpea? 4. What effect does frost have on the plant? 5. Why do plants become sickly and liable to disease if they grow in shady places?

III. Soil relations.

- (1) Grows well on a great variety of soils.
- (2) Comparison to clover and alfalfa.
- (3) Effect of poor soils.

Collateral study.—Visit various farms that grow cowpeas and study the kinds of soil used by the crops. Compare the cowpea crops grown in the school neighborhood with crops of clover and alfalfa.

Thought questions.—1. What is meant by a "thin soil"? 2. What are some of the characteristics of a clay soil? 3. What kind of land is best for the cowpea? 4. Are there any lime soils about the school? 5. How do we add lime to the soil?

IV. Varieties.

- (1) Characteristics.
 - (a) Size and vigor.
 - (b) Habit.
 - (c) Prolificacy.
 - (d) Disease resistance.
 - (e) Ability to retain leaves.
 - (f) Time of maturity.
 - (g) Evenness of maturity.

- (2) Fluctuations.
 - (a) Increase in vine growth.
 - (b) Increase in pod growth.

- (3) Important varieties.
 - (a) For forage.
 - Whippoorwill.
 - Iron.
 - New Era.
 - Brabham.
 - Groit.
 - (b) For table use.
 - Conch and Cream.
 - California Blackeye.
 - Extra Early Blackeye.

- (4) Names of varieties and characteristics.
 - (a) Whippoorwill—good general purpose; used for grain or hay production.
 - (b) New Era—early, erect, prolific.
 - (c) Groit—sub-erect, prolific.
 - (d) Brabham—tall, prolific, adapted to sandy soils.
 - (e) Iron—immune to root-knot and wilt; not heavy yielder.
 - (f) Victor—tall, valuable for forage and seed; resists wilt and nematode attacks.

IV. Varieties—Continued.

(4) Names of varieties and characteristics—Continued.

- (g) Arlington—bush, very prolific.
- (h) Columbia—half bushy, prolific.
- (i) Taylor—pods held low, hard to harvest.
- (j) Early Buff—very early variety, good northern grower.
- (k) Michigan Favorite—grown from northern Texas to Michigan, good for table use.
- (l) Early Red—medium early, half bushy.
- (m) Clay—medium late, large vigorous growth.
- (n) Red Ripper—not especially valuable; used for soil improvement.
- (o) Black—excellent if grown in corn.
- (p) Catjang—half-bushy, very late grower.
- (q) Blackeye—used for table vegetables.
- (r) White—not valuable for forage, used for table vegetables.
- (s) Asparagus bean—procumbent, very viny, used as snap beans.

Collateral study.—Make a list of the different varieties of cowpeas grown about the school, and learn the characteristics of each variety. Compare various cowpea crops in regard to vigor of growth, ease of cultivation, and value of produce.

Thought questions.—1. What is meant by "prolificacy"? Why is this desirable? How are the cowpea seeds gathered? 3. How are varieties distinguished? 4. Describe the characteristics of five forage varieties. 5. Of three table varieties.

V. Fertilizers.

- (1) Feed for fertilizers.
- (2) Types of fertilizers used.

Collateral study.—Locate those farms that use fertilizers on their cowpea crop. Observe how the fertilizer is used, the amount used, and the benefits derived.

Thought questions.—1. What do you mean by a badly run-down soil? 2. What causes a soil to run down? 3. What are nitrogenous fertilizers? Why are these generally necessary for cowpeas? 4. What two fertilizer ingredients are necessary? 5. What amounts of fertilizers are sometimes used?

VI. Preparation of seed bed.

- (1) Preparation similar to that for corn.
- (2) Preparation when used as catch crop.

Collateral study.—Prepare a seed bed on the home farm for the planting of cowpeas. Observe how the neighboring farmers prepare to plant cowpeas in corn.

Thought questions.—1. Describe how you would make a seed bed for cowpeas. 2. Why is early plowing helpful? 3. What is a catch crop? 4. When is land clean and mellow? 5. Describe a single-disk drill.

VII. Inoculation.

- (1) Areas where inoculation is necessary.
- (2) Evidences of successful inoculation.
- (3) Methods of inoculation.

Collateral study.—Assist some farmer in the inoculation of his cowpea seed. If inoculation is common in the school area, study how it is done and report observations to class.

VII. Inoculation—Continued.

Thought questions.—1. What is inoculation? 2. Why is it sometimes needed? 3. What are bacteria? How do they help the cowpea? 4. What is protein? 5. Where is inoculation generally necessary?

VIII. Time of sowing.

- (1) Soil warm; danger from cold past.
- (2) Depends on purpose of crop.
- (3) Variations with varieties.

Collateral study.—With a soil thermometer make frequent tests of soil temperature where cowpeas are to be planted. Keep a record at the school of temperature ranges and of frost dates. Note the effects of these upon the cowpea crops.

Thought questions.—1. When should cowpea seed be sown? 2. What is the danger in sowing in a cold, wet soil? 3. When should green pasturage seed be sown? 4. How late may seed be sown? 5. In following oats or wheat, when should seed be sown?

IX. Method and rate of sowing.

- (1) In rows.
- (2) Use of grain drill.
- (3) Broadcasting.
- (4) Variations in quantity used.

Collateral study.—Study the method of sowing employed by neighboring farmers. Compare the methods observed and present conclusions before class. Note carefully depth, distance and rate of sowings.

Thought questions.—1. What is the best sowing method for the production of seed? 2. What is the best sowing method for the production of forage? 3. When are cowpeas sown broadcast? 4. Why are corn and cowpeas sown together? 5. What quantities of seed should be sown for each of these methods?

X. Cultivation.

- (1) Time for cultivation.
- (2) Machines used in cultivation.
- (3) Number of cultivations.

Collateral study.—Study various methods of cultivating the cowpea crop. Make a survey of these methods found near your home and report on them to the class.

Thought questions.—1. When should the first cultivation of cowpeas take place? 2. How many cultivations are generally necessary? 3. Describe the cowpea seedling. 4. What machines are used in cultivation? 5. What is a mulch? Why is this good for cowpea growth?

XI. Cowpeas in rotation.

- (1) Need for systematic rotations.
- (2) Place of cowpea in rotation.
- (3) Systems of rotation in the South.
- (4) Types of rotation.

Collateral study.—Make a report upon the rotations practiced by farmers in the school area. List the various rotation systems, compare the same, and decide which would be best for the home farm.

Thought questions.—1. What is systematic rotation? 2. Why should the cowpea be one of a series of rotation crops? 3. Give some of the southern rotation systems. 4. Why is the cowpea a good crop to accompany cotton in a rotation? 5. What value is the cowpea in a rotation planned for live stock?

XII. Cowpeas in mixtures.

- (1) With corn.
 - (a) For silage.
 - (b) For other purposes.
- (2) With sorghum.
 - (a) For silage or hay.
 - Ease of curing.
 - Kinds of sorghums used.
 - Varieties used.
 - (b) Rate of sowing.
- (3) With Johnson grass.
 - (a) High quality yield.
 - (b) Rate of sowing.
- (4) With Sudan grass.
 - (a) Use for hay.
 - (b) Rate of sowing.
- (5) With millet.
 - (a) Use for hay.
 - (b) Maturing time.
- (6) With soy beans.
 - (a) Good for hay or pasture.
 - (b) Rate of sowing.
 - (c) Harvesting for hay.

Collateral study.—Find the kind of mixture that would be suitable for the home farm. Report upon the generally accepted cowpea mixture used by neighboring farmers.

Thought questions.—1. What is silage? 2. Name the crops generally used for silage. 3. Is Johnson grass a weed or a plant in your neighborhood? What is a weed? 4. What effect does a mixture of cowpeas and some other crop have on hay? 5. What is the commonest crop used with cowpeas for hay? 6. For what are cowpeas and corn used?

XIII. Diseases of the cowpea.

- (1) Root knot.
 - (a) Nature of disease.
 - (b) Cause of disease.
 - (c) Control of disease.
- (2) Wilt.
 - (a) Evidences of disease.
 - (b) Cause of disease.
 - (c) Control of disease.

Collateral study.—Inspect growing cowpeas for root knot and wilt. Locate diseased plants and diseased areas. Suggest remedies.

Thought questions.—1. Describe the root-knot disease. 2. What is its cause? 3. How may it be controlled? 4. What is meant by a "resistant variety"? 5. What are nematodes?

XIV. Insect enemies of the cowpea.

- (1) Kinds of weevils attacking cowpea.
- (2) Method of attack.
- (3) Effect of attack.
- (4) Control of insect pests.

Collateral study.—Collect weevils infesting the cowpea crop. Study the structure and life habits of these insects. Observe the methods used to control insect pests in cowpeas.

XIV. Insect enemies of the cowpea—Continued.

Thought questions.—1. What weevils attack the cowpea? 2. How is this attack made? 3. How may weevils be controlled? 4. Describe some formulas suggested. 5. How are the seeds treated to prevent damage?

XV. Cowpeas, soy beans, and velvet beans compared.

(1) As to climatic adaptations.

(2) As to special uses.

(3) As to seed production.

Collateral study.—Make surveys of cowpeas, soy beans, and velvet bean crops grown in the neighborhood. Compare these crops for costs of production, feeding value, market returns, and soil improvement.

Thought questions.—1. Of what use to the farmer is such a comparison? 2. What three factors constitute the value of these crops? 3. What is a cash crop? 4. What is the ranking value of these crops for human food? 5. What are summer annuals?

Practical exercises.—1. Visit farms where cowpeas are grown and study carefully the methods of planting, cultivating, and harvesting the crop.

2. Make a collection of the various varieties of the cowpea plants grown in the neighborhood, dry them and mount them upon cardboard, naming the varieties and parts of each plant.

3. Collect soil from various fields where cowpeas grow. Compare these soils and note which produce the best crops.

4. Obtain the ingredients of a fertilizer suitable for cowpeas grown at home. Mix these ingredients in the proper proportion for use on the farm.

5. Select and prepare a seed bed for cowpea plants. Keep a careful record of everything done in the preparation of this bed.

6. Sow by hand a small area for cowpeas in rows. Do the same for a like-sized area with the use of a grain drill. Sow a similar area broadcast. Cultivate all three areas alike. Report on results of growth at end of season.

7. Plan several rotations suitable for farms in the school neighborhood. Consult various farmers regarding their methods for rotations.

8. Collect samples of plants showing root-knot and wilt disease. Learn their characteristics and the methods used in controlling them.

9. Make a collection of the weevils that attack the cowpea. Study the life habit of each.

10. Study the special uses of cowpeas, soy beans, and velvet beans.

